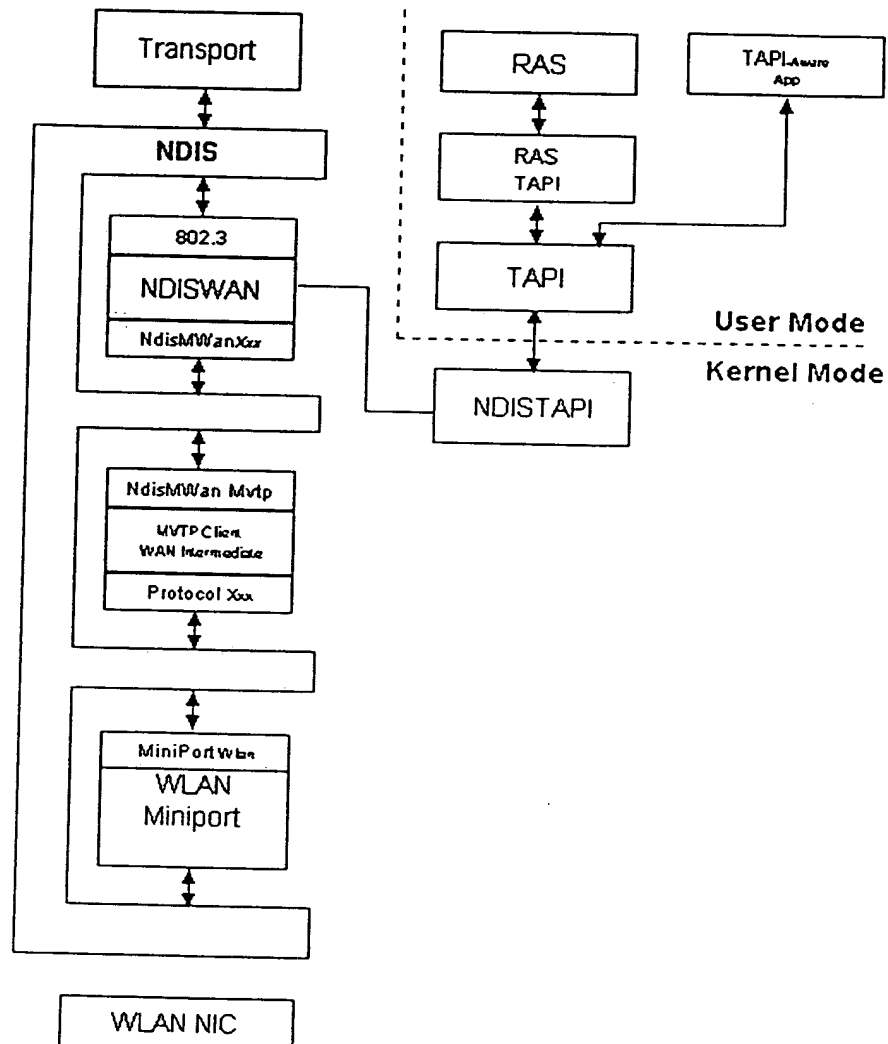


Appendix B. Microsoft Windows Mobile PPP Architecture

The relationship among the components that are described in this section is shown in the following diagram.



MVTP uses virtual devices called Mobile Virtual Private Networks (MVPNs). When you configure MVTP, you install and configure MVPNs in RAS as if they were physical devices, just like modems.

Transport Protocols

An IP datagram, IPX datagram, or NetBEUI frame is submitted by its appropriate protocol to the virtual interface that represents the MVPN connection using NDIS. NDIS submits the packet to NDISWAN.

NDISWAN

NDISWAN is an intermediate NDIS driver that provides an IEEE 802.3 miniport interface to protocol drivers and a protocol interface to WAN miniport drivers. NDISWAN provides framing, compression, and encryption services for remote access connections. NDISWAN has a private interface to the kernel-mode NDISTAPI driver for dynamically setting up and tearing down TAPI links.

MVTP Client

The MVTP Client is a WAN miniport driver. WAN miniport drivers are NDIS miniport drivers that contain the necessary code to operate dial-up equipment to establish a point to point connection. In this case, MVTP uses a signaling protocol to establish a MVTP connection between a PPP host and an MVTP FA gateway. Also, in this case, the MVTP Client is an intermediate NDIS driver that provides a protocol interface to a WLAN (Wireless LAN) miniport driver. Therefore, a virtual PPP connection is created over a wireless LAN link to a MVTP FA. The MVTP Client WAN Miniport also receives and responds to a set of WAN-specific OIDs passed to its MiniportQueryInformation and MiniportSetInformation functions. One of these OIDs, OID_WAN_SET_LINK_INFO, allows MaxSendFrameSize and MaxRecvFrameSize to be set.

RAS Components

Remote access components are a series of libraries that provide the Remote Access Service (RAS) programming interface for applications and PPP protocols (link control, authentication, and network control protocols). Remote access components can communicate directly with the NDISWAN driver or by accessing the Telephone API (TAPI). The remote access server instructs each WAN miniport driver (MVTP) to indicate when it goes into a line-up state. When the call is placed, the WAN miniport driver passes the line-up state indicator up through NDISWAN to the TAPI components. TAPI returns a call handle to NDISWAN to be used to refer to the physical connection, and then NDISWAN and the remote access components negotiate the rest of the remote access connection. PPP Authentication (PAP, CHAP) and network configuration protocols (IPCP, IPXCP, NBFCP, LCP, and so forth) are provided by the RAS system component. A WAN miniport driver implements only PPP media-specific framing.

TAPI Components

TAPI components are a series of libraries that provide a call control programming interface for all TAPI-aware applications. TAPI components communicate directly with the NDISWAN driver to manage connections. The kernel-mode flow of communication is from NDISTAPI to NDISWAN, through NDIS to a TAPI-capable WAN miniport (MVTP). The NDISTAPI driver defines how WAN miniport drivers implement telephonic services. It is closely related to the Service Provider Interface established in Windows Telephony, with telephony-capable NDIS WAN miniport drivers providing kernel-mode support for user-mode TAPI service providers. A TAPI-capable WAN miniport registers and initializes itself as a user of both WAN and TAPI services. When registration and initialization are complete, a user-level application can make telephonic requests to the user-mode KMDDSP service provider module which converts SPI requests to corresponding OIDs. The KMDDSP module passes the OIDs to the NDISTAPI driver, the kernel-mode component of TAPI. NDISTAPI routes the OIDs to the correct NDIS WAN miniport driver in order to set up, monitor, and tear down lines, and calls. NDISTAPI passes the OIDs in NdisRequest calls to the NDISWAN intermediate driver. NDISWAN passes these NDIS requests on, resulting in a call to the MiniportQueryInformation function or the MiniportSetInformation function of a TAPI-capable WAN miniport. A TAPI-capable WAN miniport communicates changes in the states of lines and calls, for instance a change from the proceeding state to the connected state, the arrival of an incoming call, or a remote disconnection. State changes are communicated to upper-layers by passing appropriate NDIS_STATUS_TAPI_XXX and NDIS_STATUS_WAN_XXX status messages to

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NdisIndicateStatus. A WAN miniport calls NdisMIndicateStatus with a *GeneralStatus* value of NDIS_STATUS_WAN_LINE_UP to indicate that a new data channel has become active.

WLAN Miniport

The WLAN Miniport is a NDIS miniport NIC driver for an 802.11 Wireless LAN.